IN THE CLAIMS:

1. (Original) An organometallic complex of the formula

$$[(D_o)_n\, ML_x\,]_k$$

where M is selected from the group consisting of Cu, Ag and Au;

D_o is selected from the group consisting of ethers, phosphines, olefins, sulfides, pyridines, carbonyl, hydroxyl, cyclopentadiene, benzene derivatives, allyls, alkyls, amines, polyamines, aniline derivatives, cyclooctadiene and combinations thereof;

n is an integer having a value from 0 to 4;

k is an integer having a value from 1 to 4;

x is an integer having a value from 1 to 4; and

L is an amidinate ligand of the formula

$$R^1\text{-}N \underline{\underline{\underline{\ }}} C(R^2) \underline{\underline{\underline{\ }}} N\text{-}R^3$$

where R^1, R^2 and R^3 are selected from the group consisting of alkyls, allyls, aryls, heteroaryls, hydrogen, non-metals and metalloids; and where R^1, R^2 and R^3 are different or the same.

2. (Original) The organometallic complex of claim 1 wherein R^1 and R^3 are the same and are selected from the group consisting of ^{t}Bu and ^{i}Pr.

3. (Original) An organometallic complex of the formula

$$H_nML_x$$

where M is selected from the group consisting of Cu, Ag and Au;

where n and x are integers and $n + x \leq 7$;

where L is an amidinate ligand of the formula

$$R^1\text{-}N \underline{\underline{\underline{\ }}} C(R^2) \underline{\underline{\underline{\ }}} N\text{-}R^3$$

where R^1, R^2 and R^3 are selected from the group consisting of alkyls, allyls, aryls, heteroaryls, hydrogen, non-metals and metalloids; and where R^1, R^2 and R^3 are different or the same.

4. (Original) The organometallic complex of claim 3 wherein R^1 and R^3 are the same and are selected from the group consisting of ^{t}Bu and ^{i}Pr.

Claims 5-8 (Cancelled)

9. (Currently amended) A method for depositing a metal or a metal compound including the steps of:

i) heating a substrate onto which deposition of said metal is to occur, said substrate being located in a deposition chamber;

ii) producing a vapor of a precursor of the formula

$$[(D_o)_n ML_x]_k$$

where M is selected from the group consisting of Cu, Ag and Au;

D_o is selected from the group consisting of ethers, phosphines, olefins, sulfides, pyridines, carbonyl, hydroxyl, cyclopentadiene, benzene derivatives, allyls, alkyls, amines, polyamines, aniline derivatives, cyclooctadiene and combinations thereof;

n is an integer having a value from 0 to 4;

k is an integer having a value from 1 to 4;

x is an integer having a value from 1 to 4; and

L is an amidinate ligand of the formula

$$R^1\text{-}N \text{ --- } C(R^2) \text{ --- } N\text{-}R^3$$

where R^1, R^2 and R^3 are selected from the group consisting of alkyls, allyls, aryls, heteroaryls, hydrogen, non-metals and metalloids; and where R^1, R^2 and R^3 are different or the same,

in the chamber in the vicinity of the substrate; and

iii) decomposing the vapor to deposit the metal on the substrate.

10. (Currently amended) A method for depositing a metal or a metal compound including the steps of:

i) heating a substrate onto which deposition of said metal is to occur, said substrate being located in a deposition chamber;

ii) producing a vapor of a precursor of the formula

$$H_nML_x$$

where M is selected from the group consisting of Cu, Ag and Au;

where n and x are integers and $n + x \leq 7$;

where L is an amidinate ligand of the formula

R^1-N --- C(R^2) --- N-R^3

where R^1, R^2 and R^3 are selected from the group consisting of alkyls, allyls, aryls, heteroaryls, hydrogen, non-metals and metalloids; and where R^1, R^2 and R^3 are different or the same, in the chamber in the vicinity of the substrate; and

iii) decomposing the vapor to deposit the metal on the substrate.

Claims 11-21 (Cancelled)

22. (New) The method of claim 9 wherein the metal compound is selected from a group consisting of a metal oxide, a metal sulfide, a metal boride, a metal silicide, a metal nitride, a metal carbide, a metal phosphide, a metal arsenide, a metal selenide, and a metal telluride.

23. (New) The method of claim 10 wherein the metal compound is selected from the group consisting of a metal oxide, a metal sulfide, a metal boride, a metal silicide, a metal nitride, a metal carbide, a metal phosphide, a metal arsenide, a metal selenide, and a metal telluride.

24. (New) A method for the deposition of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 4 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

25. (New) A method for the deposition of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

26. (New) A method for the deposition of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

27. (New) The method as claimed in claim 25 wherein the deposition process is chemical vapor deposition or chemical vapor deposition coupled with a physical deposition technique.

28. (New) The method as claimed in claim 26 wherein the deposition process is chemical vapor deposition or chemical vapor deposition coupled with a physical deposition technique.

29. (New) A method for the deposition of metal oxides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of oxygen or a chemical source of oxygen under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

30. (New) A method for the deposition of metal oxides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of oxygen or a chemical source of oxygen under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

31. (New) A method for the deposition of metal sulfides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of sulfur or a chemical source of sulfur under conditions suitable for said deposition to occur and where said metal is Cu, Ag or Au.

32. (New) A method for the deposition of metal sulfides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of sulfur or a chemical source of sulfur under conditions suitable for said deposition to occur and where said metal is Cu, Ag or Au.

33. (New) A method for the deposition of metal borides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of boron or a chemical source of boron under conditions suitable for said deposition to occur and where said metal is Cu, Ag or Au.

34. (New) A method for the deposition of metal borides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of boron or a chemical source of boron under conditions suitable for said deposition to occur and where said metal is Cu, Ag or Au.

35. (New) A method for the deposition of metal silicides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of silicon or a chemical source of silicon under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

36. (New) A method for the deposition of metal silicides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of silicon or a chemical source of silicon under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

37. (New) A method for the deposition of metal nitrides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of ammonia or a chemical source of nitrogen under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

38. (New) A method for the deposition of metal nitrides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of ammonia or a chemical source of nitrogen under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

39. (New) A method for the deposition of metal carbides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations

thereof, in the presence of a chemical source of carbon under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

40. (New) A method for the deposition of metal carbides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of a chemical source of carbon under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

41. (New) A method for the deposition of metal phosphides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of phosphine or a chemical source of phosphorus under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

44. (New) A method for the deposition of metal phosphides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of phosphine or a chemical source of phosphorus under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

43. (New) A method for the deposition of metal arsenides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of arsine or a chemical source of arsenic under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

44. (New) A method for the deposition of metal arsenides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of arsine or a chemical source of arsenic under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

45. (New) A method for the deposition of metal selenides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of hydrogen selenide or a chemical source of selenium under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

46. (New) A method for the deposition of metal selenides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of hydrogen selenide or a chemical source of selenium under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

47. (New) A method for the deposition of metal tellurides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 1 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of hydrogen telluride or a chemical source of tellurium under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

48. (New) A method for the deposition of metal tellurides of the metal M onto a substrate comprising subjecting an organometallic complex according to claim 3 and said substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in the presence of hydrogen telluride or a chemical source of tellurium under conditions suitable for said deposition to occur and where said metal M is Cu, Ag or Au.

49. (New) A method for producing an alloy of two or more metals comprising subjecting an organometallic complex according to claim 1 and a substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in order to deposit the metals M of each of said organometallic complexes onto said substrate, wherein at least two of said two or more organometallic complexes comprise different metals M.

50. (New) A method for producing an alloy of two or more metals comprising subjecting an organometallic complex according to claim 3 and a substrate to heat, light, ultrasound, radiation, high energy particles, reactive gases, or combinations thereof, in order to deposit

the metals M of each of said organometallic complexes onto said substrate, wherein at least two of said two or more organometallic complexes comprise different metals M.